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1992 Feature Article - Government Redistribution of Income

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INTRODUCTION

Government benefits and taxes redistribute resources between members of the community. Household income is reduced by personal income taxes and by indirect taxes passed on by producers and sellers in the prices households pay for goods and services. On the other hand, household income is increased by benefits in the form of regular cash payments (such as the age pension) and government services.

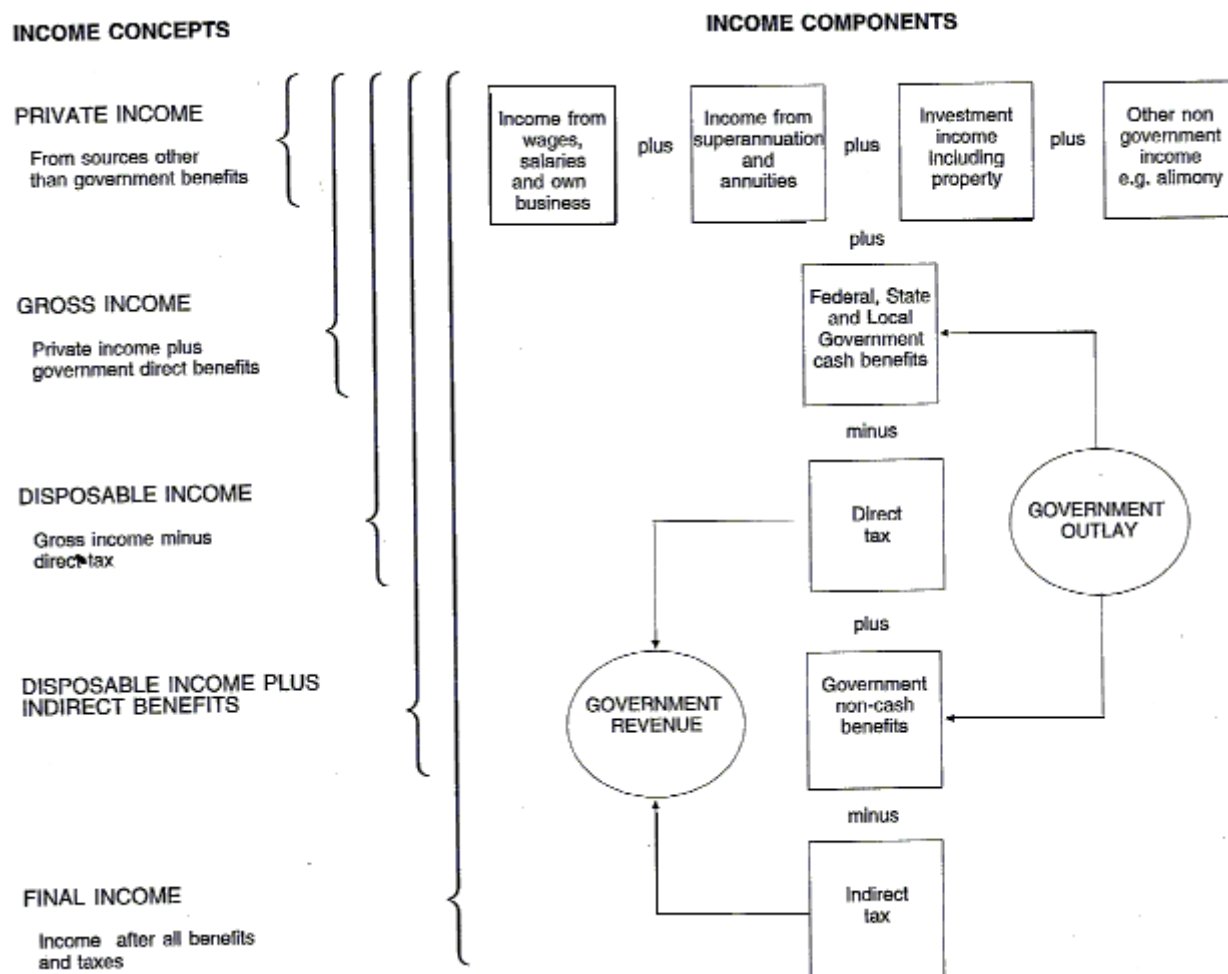
A recent study undertaken and published by the ABS traced the effects of government fiscal (taxing and spending) programs on Australian households in 1988-89. The study was based on a representative sample of households taken from the 1988-89 Household Expenditure Survey (HES) and the results were weighted to give estimates for the total population. As in the previous study pertaining to 1984, the 1988-89 study "The Effects of Government Benefits and Taxes on Household Income" (cat. no. 6537.0) shows the extent to which different households benefit from government redistribution of income.

This article provides selected findings from the study. Following an explanation of income concepts, it describes the pattern of income redistribution among households classified by income level and according to life-cycle groups. The article then explores the extent of income inequality before and after government taxing and spending and looks at the relative effectiveness of the broad set of fiscal policies (ie direct and indirect taxes and direct and indirect benefits) in redistributing income. Finally, the paper examines the extent to which income redistribution has changed since 1984.

INCOME CONCEPTS AND DEFINITIONS

The starting point of the study was the adjustment of **private income**. Private income is the total current weekly income of all members of the household including income from employment, self-employment, investments and other non-government sources before the deduction of taxes and excluding any government benefits. Government direct benefits to persons, such as pensions and unemployment benefits, were added to private income to obtain **gross income**. Direct taxes were deducted from gross income to obtain **disposable income**. Government indirect benefits for housing, education, health and social security and welfare were added to give **disposable income plus indirect benefits**. Finally, indirect taxes were deducted from disposable income plus indirect benefits to produce **final income**. The derivations for the successive income concepts are illustrated in Figure 1.

FIGURE 1. INCOME CONCEPTS AND COMPONENTS



The taxes and benefits used in the adjustment of income were as follows:

- **direct benefits** in the form of government cash pensions and benefits such as the age and sole parent pension, unemployment and sickness benefits and family allowance payments;
- **indirect benefits** received from government outlays on health, education, housing, and social security and welfare programs. Indirect benefits were allocated on the basis of household utilisation of the respective services;
- **direct taxes** such as imputed income tax and medicare liabilities; and
- **indirect taxes** such as sales and payroll taxes which were imputed from household expenditure on goods and services.

Income of each member of the 1988-89 Household Expenditure Survey population was adjusted to calculate the income measures shown in Figure 1. Comparisons of household private income with successive income concepts enabled changes in household income due to government benefits and taxes to be observed. Because adjustments were made to the individual household records, comparisons were made possible for the household population as a whole and for selected sub-groups.

Population totals for government outlay and revenue from the study under-stated actual government outlay and revenue as reported by the ABS in public finance publications. This under-statement was due mostly to limiting allocation to outlay and revenue which could be traced to the household sector. See the Attachment for a more detailed explanation. Total taxes

exceeded total benefits in the study, reflecting the differing extent to which taxes and benefits could be allocated.

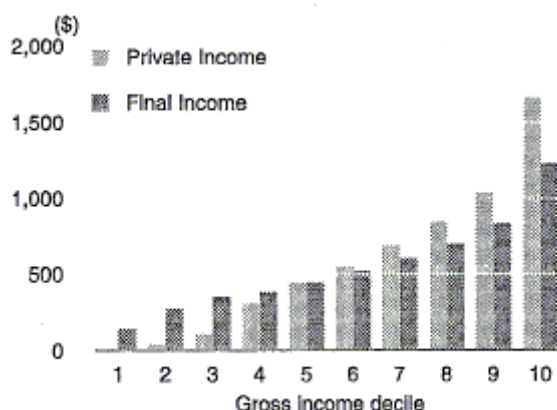
PATTERNS OF INCOME REDISTRIBUTION

Of particular interest in income redistribution studies is how rich and poor households fare. Unfortunately, it is not a straightforward exercise to classify households according to their economic well-being. While total income is obviously an important determinant of household well-being, other factors such as the number and type of people in the household (i.e. size and composition) are also important as they affect demands on household income. In recognizing these factors, the following analysis provides two views of income redistribution amongst households. The first simply classifies households according to their income levels while the second categorises households according to life-cycle groups. The second classification recognises that household income and household needs are associated with life-cycle stages.

Redistribution between Income Groups

The net effect of benefits and taxes in 1988-89 was to substantially reduce income differences between households ranked according to income. This is illustrated in Graph 1. In terms of 'private income', that is income received by households before government intervention, households in the lowest income decile (the 10 percent of households with the lowest gross income) on average obtained a small negative income while those in the highest income decile (the 10 per cent of households with the highest gross income) obtained an average weekly income of \$1,665. The negative average weekly income of the lowest income group (-\$1.05) reflects the fact that many households in this group recorded net losses from their business and property investments. However, after the addition of benefits and subtraction of taxes, the final income of the lowest income group was increased to an average of \$147 per week, while the income of the highest income group was reduced to an average of \$1,228 per week. Typically, those in the lower income deciles received net benefits and those in the higher deciles recorded net deficits.

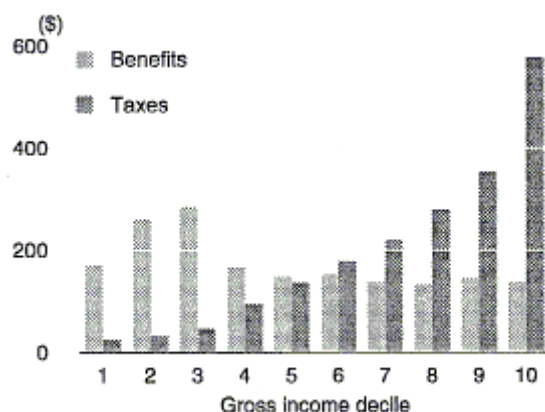
GRAPH 1. ALL HOUSEHOLDS: PRIVATE AND FINAL INCOME BY AVERAGE WEEKLY GROSS INCOME DECILE



Graph 2 shows how the incidence of benefits and taxes contributed to income redistribution. As might be expected, taxes increased with income and aside from the initial increase in benefits among the lower income deciles, benefits generally declined (albeit gradually) with increasing income. The increase in benefits across households in the lower income deciles was associated with differences in their household type and size. For example, more than 80% of households in the lowest income decile were single person households which, at best, were entitled to one full

cash payment of a government benefit or pension plus indirect benefits for one person. In the second lowest decile, 31% of households were single person households and most others consisted of a married couple only. At best, these households received a cash benefit or pension for each person plus indirect benefits for two. In the succeeding income deciles, household size continued to increase with the addition of children and both direct and indirect benefits (education benefits in particular) increased. After the third decile, benefits decreased as household income began to exceed direct benefit eligibility thresholds.

GRAPH 2. ALL HOUSEHOLDS: TAXES AND BENEFITS BY AVERAGE WEEKLY GROSS INCOME DECILE



Life-cycle groups

The following discussion is based on a classification of ten household types which depict stages in the formation, maturation and dissolution of the traditional nuclear family. The classification provides a simplified view of life-cycle possibilities (for example one parent families and group households are not shown separately), but includes 71 per cent of all Australian households in 1988-89 and a somewhat higher proportion of the total population within households. The classification is shown in Table 1.

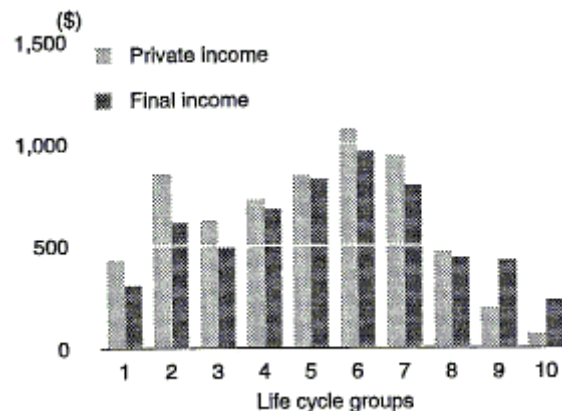
TABLE 1. LIFE CYCLE GROUPS

1	Single person only, under 35
2	Married couple - husband and wife only, reference person under 35
	Married couple with dependent children only -
3	Eldest child under 5
4	Eldest child 5 to 14
5	Eldest child 15 to 20
6	Married couple with dependent and non-dependent children only
7	Married couple with non-dependent children only
	Married couple - husband and wife only -
8	Reference person 55 to 64
9	Reference person 65 and over
10	Single person only, 65 and over

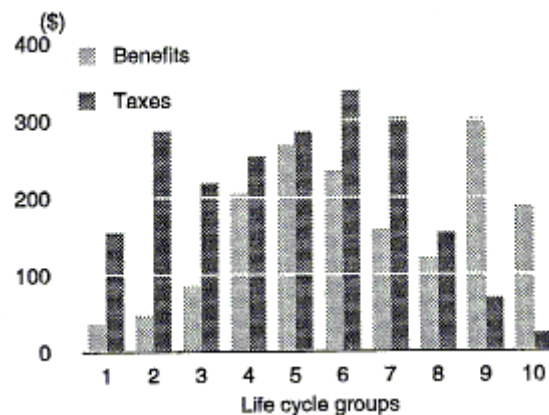
Graph 3 shows that household income is related to life-cycle stages and that the distribution of benefits and taxes tends to smooth the distribution of private income making income across the life cycle more equal. The incidence of benefits and taxes on the respective household types is shown in Graph 4. The following draws on these diagrams and data from the published study to provide a broad profile of each household type describing the effects of government benefits and

taxes on their income.

GRAPH 3. LIFE CYCLE GROUPS: AVERAGE WEEKLY PRIVATE AND FINAL INCOME



GRAPH 4. LIFE CYCLE GROUPS: AVERAGE WEEKLY BENEFITS AND TAXES



Group 1: The first group consists of young single person households only. Private income for these households was less than for other life cycle groups except those consisting of retired persons. Taxes paid were therefore relatively small. Most households were ineligible for direct benefits and as their utilisation of government health, education and housing was typically low the indirect benefits they received were particularly small. The net effect of government on these households was a deficit of \$118 per week.

Group 2: The situation of a young married couple without children was similar to the first group except that household income was much higher, largely because many households in this group had both partners employed. Given their higher incomes, the taxes paid by this group were higher and the net effect of government was a deficit of \$238 per week. This deficit was higher than that recorded for any other life cycle group.

Group 3: Once the married couple households had children, some households reverted to 'single income' households. Average income dropped slightly and taxes dropped due to the decrease in income and the increase in tax rebates available to the households. The households became eligible for Family Allowance payments and received higher levels of indirect benefits from their increased utilisation of medical clinics and hospitals. The result was a reduction in the net deficit to \$133 per week.

Group 4: Households in which the eldest child was aged between 5 and 14 years had higher incomes, partly due to the increased likelihood that both partners were employed and,

presumably, partly due to their increased labour force experience. While taxes increased with income, Family Allowance payments were higher than for the previous group and school education benefits increased dramatically from \$5 per week to \$99 per week. The overall result was a further reduction in the net deficit to \$47 per week.

Group 5: Married couples with their eldest child aged 15 to 20 years showed further increases in private income and direct tax. The household received even more school education benefits plus a large increase in tertiary education benefits. Total education benefits increased by \$60 per week compared to the previous life cycle group. Overall, total taxes and total benefits were almost equal resulting in a net deficit of \$17 per week.

Group 6: Married couple families with both dependent and non dependent children often had three or more employed persons in the household resulting in a higher private income and higher tax payments than for any other life cycle group. Both direct and indirect benefits decreased, in particular, school benefits decreased dramatically by \$52 per week. The decrease in benefits led to an increase in the net deficit for these households to \$104 per week.

Group 7: When all children became non dependent and some left the household, indirect benefits decreased sharply from \$200 to \$88 per week. This was partially offset by an increase in the receipt of direct benefits, in particular the Age, Veteran's Affairs and Invalid pensions. The final result was an increase in the household's net deficit to \$145 per week.

Group 8: As the couple approached retirement age and all the children left home, many households experienced the loss of at least one employed person. Household income and taxes paid dropped dramatically and indirect benefits dropped slightly. The result of the reduced tax payments and slightly reduced benefits was a net deficit of \$33 per week.

Group 9: Married couple households in which one or both partners were aged 65 years or over showed another sharp reduction in private income and taxes paid. In 80% of cases, both persons in the household received government cash benefits, the main sources being the Aged and Veterans' Affairs pensions. Levels of hospital care and usage of pharmaceuticals almost tripled. Due to the sharp reduction in taxes and increase in benefits, this group was the first to receive a net benefit. The net benefit was equal to \$233 per week.

Group 10: The final life cycle household consisted of an elderly person living alone. Since the household was smaller, private income continued to decline as did taxes. Benefits also decreased as household size decreased. A net benefit was still received, but it was smaller at \$167 per week.

The redistribution of income across the life cycle indicates that government benefits and taxes smooth the peaks and troughs in life-cycle income according to household needs. In general, it can be observed that income is redistributed from younger households without children and married couple households in which children are approaching adulthood to households with dependent children and households of mainly retired persons.

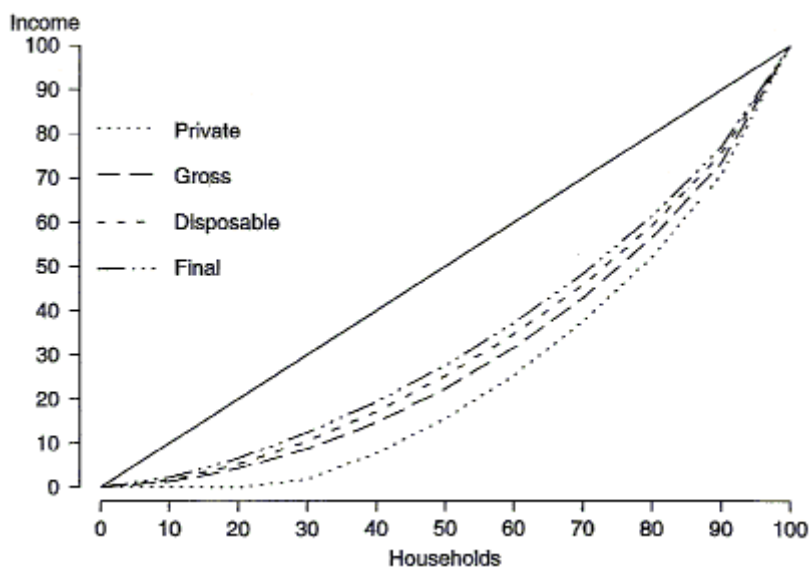
The classification of households by life cycle stages (and income groups) sheds some light on the impact of government benefits and taxes on different household types. However, it should be noted that the income, benefit and tax statistics are averages and do not necessarily represent the position of any particular household with the characteristic specified. For example, among the 'married couple with dependent children only' groups shown in the life cycle classification, those households with low income are not distinguished from those with high income levels. The effect of benefits and taxes on households in such different circumstances can be explored in the detailed tables presented in the study publication.

INCOME INEQUALITY IN 1988-89

The extent of income inequality and the effectiveness of government policies in reducing inequalities can be shown in various ways. A convenient representation of the degree of inequality, before and after government intervention, is provided in Graph 5. In this graph the cumulative proportion of income from private income, gross income, disposable income and final income have been plotted against the cumulative proportion of households classified and ranked by income type deciles. The resultant curves are known as Lorenz curves. See the Attachment for a more detailed explanation of Lorenz curves. The four curves illustrate the extent to which the different distributions diverge from absolute equality.

As can be seen from Graph 5, the Lorenz curve for private income shows a substantial degree of 'income inequality. Reading from the bottom curve the twenty per cent of households with the lowest private incomes had less than 1 per cent of private income. Moreover, the 80 per cent of households with the lowest private income had just over a half (52 per cent) of total private income or, in other words, the 20 per cent in the highest group had 48 per cent of total private income. This inequality was progressively reduced with the respective government instruments used to redistribute income. Reading upwards from the 20 per cent point on the horizontal axis, and then across to the vertical axis at the point of intersection with each of the curves, it can be seen, for example, that the 20 per cent of households with the lowest income had about 4 per cent of gross income, 5 per cent of disposable income and 7 per cent of final income. The redistribution of income away from those in the highest income groups is similarly evident.

GRAPH 5. ALL HOUSEHOLDS: LORENZ CURVES
Cumulative proportions



The differences illustrated can also be summarised in terms of an index of inequality known as the Gini coefficient. See the Attachment for an explanation of the Gini coefficient. This co-efficient was 0.48 for private income, representing a distribution roughly mid-way between complete income equality (represented by a co-efficient of zero) and the opposite extreme where one household has all the income (represented by a co-efficient of one). The Gini coefficient for gross income was 0.39, for disposable income 0.35 and for final income 0.31. Overall, the effect of government benefits and taxes was to reduce the measure of inequality in the distribution of income by over one third.

The ABS study enables some assessment to be made of the relative contributions of the broad

taxing and spending instruments of government (direct and indirect taxes and direct and indirect benefits) in reducing income inequality. In undertaking this assessment Gini coefficients were calculated for private income and then for private income plus direct benefits, private income plus indirect benefits, private income minus direct taxes and private income minus indirect taxes. These are shown in Table 2. The percentage difference between the Gini coefficient for private income and the subsequent income measures provides an indication of the relative effectiveness of each instrument.

TABLE 2. RELATIVE CONTRIBUTION OF BENEFITS AND TAXES TO INCOME AND REDISTRIBUTION, 1988-89

	Gini Coefficient(a)	Relative Contribution(b)
Private income	0.477	
plus direct benefits	0.378	-20.8
plus indirect benefits	0.400	-16.1
minus direct taxes	0.455	-4.6
minus indirect taxes	0.504	+5.7

(a) Households ranked by private income decile. (b) Percentage difference in Gini coefficient from private income coefficient.

The changes in the Gini coefficients indicate that direct benefits made the greatest contribution to increasing equality, indirect benefits contributed almost as much as direct benefits, direct taxes made only a small contribution, and indirect taxes increased inequality.

INCOME REDISTRIBUTION IN 1984 AND 1988-89

Changes in government taxing and spending policies over time can have significant effects on income distribution. However, the relative contribution of any particular change, such as the lowering of marginal tax rates, or the tightening of eligibility criteria for pensions and benefits is difficult to assess from the two studies that have now been undertaken by the ABS. The difficulties arise because of:

- the number of major and minor (and possibly compensating) policy changes that may have been made in intermediate budgets;
- changes in earning patterns within households such as the rise in two income families and changes in other household characteristics; and
- the crudeness and instability of many of the information sources, and hence assumptions, used to develop the models which allocate benefits and taxes to households.

Despite these limitations it is useful to observe whether overall patterns of income redistribution have changed between 1984 and 1988-89 as measured by the respective ABS studies. Table 3 shows the Gini coefficients for each income concept for 1984 and 1988-89. The 1988-89 figures differ slightly from those given previously as they have been adjusted to take account of the methods used to produce the 1984 income estimates. See the Attachment for details.

TABLE 3. INCOME REDISTRIBUTION BY INCOME TYPE, 1984 AND 1988-89(a)

Gini Coefficients

	1984	1988-89
Private Income	0.470	0.472
Gross Income	0.370	0.381
Disposable income	0.326	0.341
Final Income	0.298	0.300

(a) Based on version I results. For details see attachment.

The differences in income distribution before and after government intervention between 1984 and 1988-89 can be seen to be small. Inequality of income prior to the effects of government benefits and taxes, as indicated by the Gini coefficients for private income, were at the same level in both years. The overall effect of government benefits and taxes was also the same. In both studies, Gini coefficients (rounded to two decimal places) were reduced from 0.47 for private income to 0.30 for final income. The slight increase in income inequality in gross and disposable income implies that government cash transfers and income taxes were less distributive in 1988-89, and that government spending on services and indirect taxes were slightly more distributive. However, it is likely that changes measured may not be significant. Further study would be required to confirm these trends.

CONCLUSION

Examination of the results of the study The Effects of Government Benefits and Taxes on Household Income has shown, both graphically and quantitatively, that government policies significantly redistribute income from high to low income households. Analysis of income redistribution between life cycle groups has also indicated that government helps to redistribute income according to individual needs. The main mechanism of redistribution was shown to be the selective allocation of both indirect and direct benefits. Collection of personal taxes was shown to have only a slight redistributive effect and indirect taxes were shown to increase inequality. Comparison of the distribution of income in 1984 and 1988-89 suggests that income inequality was unchanged.

This feature article was contributed by Judith White and Horst Posselt, ABS.

ATTACHMENT

ALLOCATED AND ACTUAL OUTLAYS

The study did not allocate all government outlay and revenue in 1988-89 as explained below.

COMMONWEALTH, STATE AND LOCAL GOVERNMENT REVENUES AND OUTLAYS BY TYPE: ACTUAL AND ALLOCATED AMOUNTS, 1988-89

	Actual amounts	Amounts allocated to private households
\$'000 million		
Revenues		
Allocated to households		
Income taxes levied on individuals	47.5	36.6
Indirect taxes	45.2	18.2
Total	92.7	54.8

Not allocated to households	12.8	-
Total	105.6	54.8
Outlays		
Allocated to households		
Direct	22.8	18.1
Indirect	37.6	31.2
Total	60.3	49.2
Not allocated to households	64.2	-
Total	124.5	49.2

Sources: 1988-89 Taxation Revenue, Australia (cat. no. 5506.0) Tables 1 and 4; unpublished ABS finance statistics based on June 1991 estimates.

Reasons for not allocating certain types of outlay and revenue were as follows:

i) Allocation of government expenditure was not attempted in cases where there was no conceptual basis for determining the personal benefit received by each household (for example, expenditure on defence and law and order) or where the data required for allocation to individual households was not available (such as outlays on libraries and museums). Some revenue was not subtracted from household income for the same reasons. Company tax, for example, was not deducted because there was no clear conceptual basis for determining the amount of the deduction for each household and capital gains tax was not deducted due to data unavailability.

ii) The HES collected data exclusively in respect of the private household population and the study described the effects of benefits and taxes on this population only. Benefits and taxes for persons not living in private households (for example, those in nursing homes, boarding houses and prisons) and those paid or received by non residents were excluded.

Remaining differences between the study estimates of government expenditure and revenue and the actual figures are due to the methods used to allocate the benefits and taxes and the data limitations of the HES. Full details of the allocation methods are given in the study publication mentioned above. Unadjusted HES data was used in the study and data limitations, such as under-statement of business income and expenditure on alcohol, are reflected in the final results.

MEASURES OF INEQUALITY

The Lorenz Curve

A convenient and helpful method of summarising income distribution is the Lorenz curve, which plots the cumulative proportion of income against the cumulative proportion of income recipients. At each point on the curve, the proportion of income received by the lowest x per cent of the population is given. For example, the lowest 10 per cent of the recipient units may receive 3 per cent of aggregate income.

Lorenz curves can be used to compare the degree of inequality between two or more distributions over time or between different income measures. If the Lorenz curve for one distribution is completely inside the other relative to the forty five degree diagonal, then this distribution is more equal.

The Gini Coefficient

A common measure of inequality, closely associated with the Lorenz curve, is the Gini coefficient of concentration. The Gini coefficient expresses the area between the forty five degree diagonal and the Lorenz curve as a proportion of the total area under the diagonal. As the Lorenz curve deviates further from the diagonal, the Gini coefficient becomes larger. The coefficient varies

between zero (representing equality of income) and one (the situation where one income unit has all the income).

TWO VERSIONS OF THE 1988-89 STUDY

Version I

The first version of the 1988-89 study replicated the 1984 study as much as possible, but was updated according to changes in government policy (such as personal tax marginal rates and eligibility criteria for benefits). Results from the first version were produced specifically to facilitate comparisons between the 1984 and 1988-89 studies. Such comparisons should nevertheless be treated with caution as some changes in study methods were inevitable. Table 3 of the paper is based on version 1 of the study.

Version II

The second version included various enhancements to methods and assumptions in allocating taxes and benefits. Version II data was consequently used for most of the analysis in this paper and the publication.

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